

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
28 October 2004 (28.10.2004)

PCT

(10) International Publication Number
WO 2004/092101 A3

(51) International Patent Classification⁷: **C07C 37/11**,
37/14, C08B 37/16, C08L 5/16, C07C 39/23, C07D
311/80

(21) International Application Number:
PCT/US2004/010430

(22) International Filing Date: 2 April 2004 (02.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/462,407 10 April 2003 (10.04.2003) US

(71) Applicant (for all designated States except US):
MALLINCKRODT INC. [US/US]; 675 McDonnell
Boulevard, P.O. Box 5840, St. Louis, Missouri 63134
(US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **GU, Hong** [US/US];
11630 Chieftain Drive, St. Louis, Missouri 63146 (US).

(74) Agent: **BOONE, Jeffrey, S.**; Mallinckrodt Inc., 675 Mc-
Donnell Boulevard, P.O. Box 5840, St. Louis, Missouri
63134 (US).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), Euro-
pean (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,
GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

(88) Date of publication of the international search report:
9 December 2004

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: OLIVETOL-CYCLODEXTRIN COMPLEXES AND REGIO-SELECTIVE PROCESS FOR PREPARING DELTA
9-TETRAHYDROCANNABINOL

(57) Abstract: A cyclodextrin-olivetol derivative complex is provided. The complex effectively blocks reaction at specific carbons
to prevent unwanted reactions. A process for preparing a cannabinoid compound is further provided. The process comprises reacting
at least one terpenoid with cyclodextrin-olivetol derivative complex to produce the cannabinoid compound.

WO 2004/092101 A3

INTERNATIONAL SEARCH REPORT

Int onal Application No
PCT/US2004/010430

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07C37/11 C07C37/14 C08B37/16 C08L5/16 C07C39/23
C07D311/80

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07C C08B C08L C07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, CHEM ABS Data, BEILSTEIN Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 99/32107 A (DAVIS STANLEY STEWART ; WATTS PETER JAMES (GB); DANBIOSYST UK (GB)) 1 July 1999 (1999-07-01) page 3, lines 14-23 page 7, line 18 - page 8, line 15	1-5
A	CRAIG SIEGEL ET AL: "Synthesis of Racemic and Optically Active Delta 9-Tetrahydrocannabinol (THC) Metabolites" J. ORG. CHEM., vol. 56, 1991, pages 6865-6872, XP002297728 the whole document	6-30

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

23 September 2004

Date of mailing of the international search report

08/10/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Cooper, S

INTERNATIONAL SEARCH REPORT

Int onal Application No
PCT/US2004/010430

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
W0 9932107 A	01-07-1999	AU 756669 B2	23-01-2003
		AU 1497299 A	12-07-1999
		CA 2313316 A1	01-07-1999
		EP 1437136 A1	14-07-2004
		EP 1039898 A1	04-10-2000
		W0 9932107 A1	01-07-1999
		JP 2001526221 T	18-12-2001
		NO 20003161 A	16-06-2000
		NZ 504679 A	28-06-2002
		US 6383513 B1	07-05-2002
		ZA 9811528 A	12-10-2000
